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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/873,719	06/04/2001	David E. Heckerman	MS158346.1	4954
27195 7590 12/13/2007 AMIN. TUROCY & CALVIN, LLP 24TH FLOOR, NATIONAL CITY CENTER 1900 EAST NINTH STREET CLEVELAND, OH 44114			EXAMINER STARKS, WILBERT L	
			ART UNIT 2129	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s) mn	
	09/873,719	HECKERMAN ET AL.	
	Examiner	Art Unit	
	Wilbert L. Starks, Jr.	2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-25,27-30,32-42,44-48,50-60 and 62-64 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-25,27-30,32-42,44-48,50-60 and 62-64 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 U.S.C. § 101

1. 35 U.S.C. §101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

the invention as disclosed in claims 1, 3-25, 27-30, 32-42, 44-48, 50-60, and 62-64 is directed to non-statutory subject matter.

2. Claims 1, 3-25, 27-30, 32-42, 44-48, 50-60, and 62-64 are not limited to practical applications. Specifically, Examiner finds that *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994) controls the 35 U.S.C. §101 issues on that point for reasons made clear by the Federal Circuit in *AT&T Corp. v. Excel Communications, Inc.*, 50 USPQ2d 1447 (Fed. Cir. 1999). Specifically, the Federal Circuit held that the act of:

...[T]aking several abstract ideas and manipulating them together adds nothing to the basic equation. *AT&T v. Excel* at 1453 quoting *In re Warmerdam*, 33 F.3d 1354, 1360 (Fed. Cir. 1994).

Examiner finds that Applicant's "computer readable data set" references are just such abstract ideas. True, had Applicant claimed a "computer readable medium," Applicant would have claimed a "product of manufacture" and would get "two bites at the apple," as it were, to have the claims analyzed as statutory (that is, based on the claim that it is

a "product of manufacture" or based on the underlying method of the claim.) Such is not the case here...Applicant claims a "computer readable data set." As such, a computer readable data set is not computer program steps on a computer readable medium that causes the computer to do a specific thing...it is merely an abstract data set.

3. Examiner bases his position upon guidance provided by the Federal Circuit in *In re Warmerdam*, as interpreted by *AT&T v. Excel*. This set of precedents is within the same line of cases as the *Alappat-State Street Bank* decisions and is in complete agreement with those decisions. *Warmerdam* is consistent with *State Street's* holding that:

Today we hold that *the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price*, constitutes a practical application of a mathematical algorithm, formula, or calculation because it produces 'a useful, concrete and tangible result' -- *a final share price momentarily fixed for recording purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.* (emphasis added) *State Street Bank* at 1601.

4. True enough, that case later eliminated the "business method exception" in order to show that business methods were not per se nonstatutory, but the court clearly *did not* go so far as to make business methods *per se* statutory. A plain reading of the excerpt above shows that the Court was *very specific* in its definition of the new *practical application*. It would have been much easier for the court to say that "business methods were per se statutory" than it was to define the practical application in the case as "...the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price..."

5. The court was being very specific.
6. Additionally, the court was also careful to specify that the “useful, concrete and tangible result” it found was “a final share price momentarily fixed for recording purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.” (i.e. the trading activity is the further practical use of the real world monetary data beyond the transformation in the computer – i.e., “post-processing activity”.)
7. Applicant cites no such specific results to define a useful, concrete and tangible result. Neither does Applicant specify the associated practical application with the kind of specificity the Federal Circuit used.
8. Furthermore, in the case *In re Warmerdam*, the Federal Circuit held that:

...[T]he dispositive issue for assessing compliance with Section 101 in this case is whether the claim is for a process that goes beyond simply manipulating ‘abstract ideas’ or ‘natural phenomena’ ... As the Supreme Court has made clear, ‘[a]n idea of itself is not patentable, ... *taking several abstract ideas and manipulating them together adds nothing to the basic equation*’. *In re Warmerdam* 31 USPQ2d at 1759 (emphasis added).

9. Since the Federal Circuit held in *Warmerdam* that this is the “dispositive issue” when it judged the usefulness, concreteness, and tangibility of the claim limitations in that case, Examiner in the present case views this holding as the dispositive issue for determining whether a claim is “useful, concrete, and tangible” in similar cases. Accordingly, the Examiner finds that Applicant manipulated a set of abstract “computer readable data sets” to solve purely algorithmic problems in the abstract (i.e., what *kind* of “data” is used? Algebraic word problems? Boolean logic problems? Fuzzy logic algorithms? Probabilistic word problems? Philosophical ideas? Even vague expressions, about which even reasonable persons could differ as to their meaning? Combinations thereof?) Clearly, a claim for algorithmic manipulation of “computer readable data sets” is provably even more abstract (and thereby less limited in practical application) than pure “mathematical algorithms” which the Supreme Court has held are per se nonstatutory – in fact, it *includes* the expression of nonstatutory mathematical algorithms.

10. Since the claims are not limited to exclude such abstractions, the broadest reasonable interpretation of the claim limitations includes such abstractions. Therefore, the claims are impermissibly abstract under 35 U.S.C. §101 doctrine.

11. Since *Warmerdam* is within the *Alappat-State Street Bank* line of cases, it takes the same view of “useful, concrete, and tangible” the Federal Circuit applied in *State Street Bank*. Therefore, under *State Street Bank*, this could not be a “useful, concrete and tangible result”. There is only algorithmic manipulation of abstract ideas.

12. The Federal Circuit validated the use of *Warmerdam* in its more recent *AT&T Corp. v. Excel Communications, Inc.* decision. The Court reminded us that:

Finally, the decision in *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994) is not to the contrary. *** The court found that the claimed process did nothing more than manipulate basic mathematical constructs and concluded that 'taking several abstract ideas and manipulating them together adds nothing to the basic equation'; hence, the court held that the claims were properly rejected under §101 ... Whether one agrees with the court's conclusion on the facts, the holding of the case is a straightforward application of the basic principle that mere laws of nature, natural phenomena, and abstract ideas are not within the categories of inventions or discoveries that may be patented under §101. (emphasis added) *AT&T Corp. v. Excel Communications, Inc.*, 50 USPQ2d 1447, 1453 (Fed. Cir. 1999).

13. Remember that in *In re Warmerdam*, the Court said that this was the dispositive issue to be considered. In the *AT&T* decision cited above, the Court reaffirms that this is the issue for assessing the "useful, concrete, and tangible" nature of a set of claims under §101 doctrine. Accordingly, Examiner views the *Warmerdam* holding as the dispositive issue in this analogous case.

14. The fact that the invention is merely the manipulation of *abstract ideas* is clear. The data referred to by Applicant's phrase "computer readable data set" is simply an abstract construct that does not limit the claims to the transformation of real world data (such as monetary data or heart rhythm data) by some disclosed process. Consequently, the necessary conclusion under *AT&T*, *State Street* and *Warmerdam*, is straightforward and clear. The claims take several abstract ideas (i.e., "computer readable data sets" in the abstract) and algorithmically manipulate them together adding

nothing to the basic equation. Claims 1, 3-25, 27-30, 32-42, 44-48, 50-60, and 62-64 are, thereby, rejected under 35 U.S.C. §101.

Claim Rejections - 35 U.S.C. §112

The following is a quotation of the first paragraph of 35 U.S.C. §112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 3-25, 27-30, 32-42, 44-48, 50-60, and 62-64 are rejected under 35 U.S.C. §112, first paragraph because current case law (and accordingly, the MPEP) require such a rejection if a §101 rejection is given because when Applicant has not in fact disclosed the practical application for the invention, as a matter of law there is no way Applicant could have disclosed *how* to practice the *undisclosed* practical application. This is how the MPEP puts it:

(“The how to use prong of section 112 **incorporates as a matter of law** the requirement of 35 U.S.C. 101 that the specification disclose as a matter of fact a practical utility for the invention.... If the application fails as a matter of fact to satisfy 35 U.S.C. §101, then the application also fails as a matter of law to enable one of ordinary skill in the art to use the invention under 35 U.S.C. § 112.”); In re Kirk, 376 F.2d 936, 942, 153 USPQ 48, 53 (CCPA 1967) (“Necessarily, compliance with § 112 requires a description of how to use presently useful inventions, **otherwise an applicant would**

anomalously be required to teach how to use a useless invention." See, MPEP 2107.01(IV), quoting *In re Kirk* (emphasis added).

Therefore, claims 1, 3-25, 27-30, 32-42, 44-48, 50-60, and 62-64 are rejected on this basis.

Claim Rejections - 35 U.S.C. §102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. §102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claims 1, 19, 30, 42, and 64 are rejected under 35 U.S.C. §102(b) as being anticipated by Guha et al¹. Specifically:

Claims 1, 19, 30, 42, and 64

Claim 1, 19, 30, 42, and 64's "a first training algorithm that efficiently builds a rough model from a subset of the computer readable data set" is anticipated by Guha et al., Fig. 2, see the "Network Performance Evaluation" element.

Claim 1, 19, 30, 42, and 64's "An evaluation component that determines whether the subset of the computer readable data set is an appropriate subset to build a model for the computer readable data set; and" is anticipated by Guha et al., Fig. 2, see the "Network Performance Evaluation " and the "New, Untrained Network" elements.

Claim 1, 19, 30, 42, and 64's "A second training algorithm that builds a refined model for the computer readable data set from the subset if deemed appropriate by the evaluation component." is anticipated by Guha et al., Fig. 2, see the "Genetic Algorithm" and the "Trained Network" elements.

Claim 64's "means for setting parameters associated with cluster weights of a cluster of data;" is anticipated by Guha et al. column 3, lines 12-25 where it recites:

Learning approaches for neural networks fall into three general categories: **unsupervised** learning, reinforcement learning, and supervised learning. In unsupervised learning, the network receives no evaluative feedback from the environment; instead it develops internal models based on properties of received inputs. In reinforcement learning, the environment provides a weak evaluation signal. In supervised learning the "desired output" for the network is provided along with every training input. Supervised learning, specifically back propagation, is used to illustrate the invention but in concept the invention can be used with any learning approach.

Response to Arguments

Applicant's arguments filed 10/31/2007 have been fully considered but they are not persuasive. Specifically:

Argument 1

Applicants' claimed invention relates generally to systems and methods that facilitate building a model to characterize data based on an appropriately sized subset of the computer readable data set. In particular, independent claim 1 (and similarly independent claims 19, 30, 42, 44, 53, 54, 62-64) recites a computer implemented system that facilitates building a statistical model for a computer readable data set, comprising a first training algorithm that efficiently builds a rough statistical model from a subset of the computer readable data set capable of statistical characterization, an evaluation component that

¹ Guha et al. (U.S. Patent Number 5,140,530; dated 18 AUG 1992; class 706; subclass 013)

evaluates the rough statistical model to determine whether the subset of the computer readable data set is an appropriate subset to build a statistical model for the computer readable data set, a second training algorithm that builds a refined statistical model for the computer readable data set from the subset if deemed appropriate by the evaluation component, the refined statistical model discovers good clustering of data for a fixed number of clusters and a data scheduler that, based on a data policy, adaptively controls the size of subsets for which the first training algorithm is applied to facilitate building a more accurate statistical model.

In particular, independent claim 1 recites acts that construct a refined statistical model from statistically characterizable data in a computationally economic way and utilizing the refined statistical model to identify clusters of data within the data set. Similar limitations of "accurate model employed to identify clusters of data within the computer readable data set," "refined statistical model identifies data clusters contained in the computer readable data set," "utilizing the refined statistical model to identify identifiable clusters in the computer readable data set," "second training policy utilized to characterize at least one cluster within the computer readable data," "utilizing the estimated model parameters determined by utilization of the second training policy to identify a cluster in the computer readable data," "using the better quality model relative to the computer readable data to identify at least a cluster of data within the computer readable data," "identifying a good clustering of data relative to the computer readable data," "identifying a cluster of data within the computer readable data set based in part on the refined statistical model," and "determining a cluster of data contained in the computer readable data set based on the more accurate estimation of statistical model parameters," are recited in independent claims 19, 30, 42, 44, 53, 54, and 62-64 respectively.

One of ordinary skill in the art will appreciate that data clustering refers to partitioning the data into a subset (clusters), so that the data in each subset share some common trait. Therefore, any system that performs the operation of taking a particular data set and partitioning the data set into clusters of data having a common trait is clearly producing a useful, concrete and tangible result. Accordingly, the claimed invention which provides for computationally efficient construction, from a data set, of a statistical model employable to statistical analysis of the characterized data set features to generate a refined statistical model and utilize the refined model to cluster the data set is producing a useful, concrete and tangible result.

Applicant uses that standard that if something is known to one of ordinary skill in the art, then it is useful, concrete, and tangible. This is the wrong standard.

If it is known to one of ordinary skill in the art, it is obvious over the prior art in the § 103 sense. Essentially, Applicant is admitting that the cited portion is obvious to one of ordinary skill in the art.

Further, for something to be "useful, concrete, and tangible" it must disclose a practical application, according to State Street Bank. Applicant has not disclosed a practical application beyond the generation of a "model". This "model" may be purely mathematical, it may be of a perpetual motion machine, it may be a pure law of nature. All of these are within the scope of Applicant's claims and, thereby make them not allowable.

Argument 2

In addition, the claimed subject does not manipulate abstract data but rather builds a useful statistical model from statistically characterizable data, wherein the constructed statistical model is employable to further analysis (e.g., data clustering) of the underlying population or phenomena, which the computer readable data set represents and the model characterizes.

"Characterizable" data is not data characterized as anything in the real world. It is uncharacterized...it is abstract. Accordingly, the rejections stand.

Argument 3

II. Rejection of Claims 1, 3-25, 27-30, 32-42, 44-48, 50-60 and 62-64 Under 35 U.S.C §112

Claims 1, 3-25, 27-30, 32-42, 44-48, 50-60 and 62-64 stand rejected under 35 U.S.C §112, first paragraph, because current case law require such a rejection if a §101 rejection is given because when Applicant has not in fact disclosed the practical application for the invention, as a matter of law there is no way Applicant could have disclosed how to

practice the undisclosed practical application. This rejection should be withdrawn for at least the following reasons. As stated above, independent claims 1, 19, 30, 42, 44, 53, 54, and 62-64 have been amended to further emphasize aspects of the claimed subject matter. Accordingly, this rejection should be withdrawn.

Applicant has not overcome the utility rejections, therefore the required 112 rejections stand.

Argument 4

III. Rejection of Claims 1, 19, 30, 42 and 64 Under 35 U.S.C. 102(b)

Claims 1, 19, 30, 42 and 64 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Guha et al. (US 5,140,530). Withdrawal of this rejection is requested for at least the following reasons. Guha et al. does not disclose or suggest all limitations set forth in the subject claims.

For a prior art reference to anticipate, 35 U.S.C. § 102 requires that "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950 (Fed. Cir. 1999) (quoting Verdegaal Bros., Inc. v. Union Oil Co., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)) (emphasis added).

Independent claims 1 (and similarly independent claims 19, 30, 42, and 64), in part, recites the refined statistical model discovers good clustering of data for a fixed number of clusters and a data scheduler that, based on a data policy. **Guha et al. fails to disclose or suggest any such clustering of data.**

Rather, Guha et al. relates to genetic learning techniques to evolve neural network architectures for applications where a general representation of neural network architecture is linked with a genetic learning strategy creating an environment for the construction of custom neural networks. However, Guha et al. is silent with respect to construction, from a data set, of a statistical model and refining the statistical model and utilizing the refined model to cluster the data set.

Not true. Applicant's Specification (page 4, lines 22-24) says the following:

The training algorithm 14 may employ **any known parameter estimation technique or induction method** that is operable to derive a model that characterizes a given subset of the data set.

The genetic algorithm (GA) of Guha et al. is a parameter estimation technique (as well as an induction method.)

In the prior art the GA is being used to find design parameters for neural networks...but what kind of neural networks are taught by the prior art? Guha et al. column 3, lines 12-25 says the following:

Learning approaches for neural networks fall into three general categories: **unsupervised** learning, reinforcement learning, and supervised learning. In unsupervised learning, the network receives no evaluative feedback from the environment; instead it develops internal models based on properties of received inputs. In reinforcement learning, the environment provides a weak evaluation signal. In supervised learning the "desired output" for the network is provided along with every training input. Supervised learning, specifically back propagation, is used to illustrate the invention but in concept the invention can be used with any learning approach.

Unsupervised neural networks (e.g., competitive neural networks, self organizing maps, etc.) are clustering methods...as claimed by Applicant. Therefore, the rejections stand.

Argument 5

Furthermore, independent claim 64, as amended, in part recites means for **setting parameters associated with cluster weights of a cluster of data**. Guha et al. **fails to disclose or suggest such novel aspects**.

Based on at least the foregoing, Guha et al. fails to anticipate each and every element of the claimed subject matter as recited in independent claims 1, 19, 30, 42, and 64 (and claims which depend there from). Therefore, this rejection should be withdrawn.

As stated before, Guha et al. column 3, lines 12-25 says the following:

Learning approaches for neural networks fall into three general categories: **unsupervised** learning, reinforcement learning, and supervised learning. In unsupervised learning, the network receives no evaluative feedback from the environment; instead it develops internal models based on properties of received inputs. In reinforcement learning, the environment provides a weak evaluation signal. In supervised learning the "desired output" for the network is provided along with every training input. Supervised learning, specifically back propagation, is used to illustrate the invention but in concept the invention can be used with any learning approach.

Unsupervised neural networks (e.g., competitive neural networks, self organizing maps, etc.) are clustering methods...as claimed by Applicant.

Further, neural networks have "weights" associated with the clusters (i.e., most unsupervised neural networks move their neural weights to the centroids of the clusters in the feature space.) Therefore, the rejections stand.

Argument 6

CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

Applicant has not overcome the prior art, nor has he overcome the §101/112 rejections. Therefore, the claims are not in condition for allowance.

Conclusion

Application/Control Number:
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Art Unit: 2129

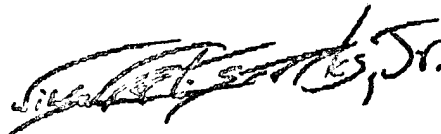
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Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Wilbert L. Starks, Jr. whose telephone number is (571) 272-3691.

Alternatively, inquiries may be directed to the following:

S. P. E. David Vincent (571) 272-3080

Official (FAX) (571) 273-8300

A handwritten signature in black ink, appearing to read "Wilbert L. Starks, Jr.", with a stylized, cursive script.

Wilbert L. Starks, Jr.
Primary Examiner
Art Unit 2129

WLS

10 DEC 2007